UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/779,622 | 02/18/2004 | Jun Kitakado | 038440-0105 | 9103 |

22428 7590 08/21/2008

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

| EXAMINER | |
|---|---|
| TIMORY, KABIR A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2611 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 08/21/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/779,622 | KITAKADO, JUN | |
| | Examiner | Art Unit | |
| | KABIR A. TIMORY | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,6,7,10-12,17 and 21-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6,7,10-12,17 and 21-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. This office action is in response to the amendment filed on 04/25/2008. Claims 1, 6, 7, 10-12, 17, and 21-27 are pending in this application and have been considered below. Claims 2-5, 8, 9, 13-16, 18-20, and 28-31 are cancelled by the applicant.

2. The objections to the drawings are clarified by the amendment. Therefore, the objection is withdrawn.

3. The objections to the claims are corrected and clarified by the amendment. Therefore, the objection is withdrawn.

4. The double patenting rejection is corrected and clarified by the amendment. Therefore, the rejection is withdrawn.

5. Applicant's arguments with respect to claims 1, 12, 17, 22, 24, 26, and 27 have been considered but are moot in view of new ground(s) of rejection because of the amendment.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 17, 25, and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

(1) The claims recite a limitation **"readable medium"** which is not disclosed in the specification. Although, the specification discloses "a computer to execute the steps estimating", there is no mention of **"readable medium"**. Therefore, the claims are failing to comply with the enablement requirement.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**9. Claims 1, 6, 7, 10-12, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki et al. (JP 09-205390) in view of Tarusawa et al. (US 5,715, 525).**

**Regarding claim 1:**

As shown in figure 1, Ozaki et al. discloses an adaptive array radio communication apparatus having a plurality of antennas (1 and 2 in figure 1), comprising:

- an estimation unit configured to estimate a correlation value between signals of a plurality of streams received at respective said plurality of antennas (8 in figure 1, paragraph 9)
- a display unit configured to display said estimated correlation value between said signals of said plurality of streams (displaying report is interpreted to be displaying correlation values) (12 in figure 1, paragraph 0009),
- an antenna correlation adjustment unit (10 in figure 1) configured to cause the correlation value between said signals of said plurality of streams to be altered manually by a user (moving antennas according to spacing data is interpreted to be the adjustment means altered manually by a user) (paragraph 0009).

Ozaki et al. disclose of the subject matter as described above including display unit (12 in figure 1) to display the correlation values and report completion except for specifically teaching a display content switch unit configured to sequentially switch the display content by said display unit periodically, wherein said display unit selectively

displays said estimated correlation value between said signals of said plurality of streams and a magnitude level of said estimated correlation value as a display content.

However Ozaki et al. disclose that the display unit 12 generates a completion report and correlation values of the received signal. Therefore, it would be obvious to one skilled in the art to use the display unit of Ozaki et al. to selectively display estimated correlation value between said signals of said plurality of streams and a magnitude level of said estimated correlation value as display content. Moreover, in paragraph 0009, Ozaki et al. clearly disclose that **"a correlation value is calculated from the signal level"**. One of ordinary skilled in the art recognizes that signal level is the magnitude level of a signal. Thus based on this portion of paragraph 0009 of Ozaki et al. it would be obvious to one skilled in the art that the display unit 12 of figure 1, does display the correlation value, which is calculated from the signal level which corresponds to magnitude level of estimated correlation value.

Ozaki et al. discloses all of the subject matter as described above except for specifically teaching switch unit configured to sequentially switch the display content by said display unit periodically.

However, Tarusawa et al. in the same field of endeavor teach switch unit configured to sequentially switch the display content by said display unit periodically (SW1, SW2 in figure 1A, col 5, lines 29-67). Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to include switching methodology as taught by Tarusawa et al. to modify the system and method of Ozaki et al. in order to space diversity reception is carried out, whereby one of the diversity

antenna is selectively used depending on the reception conditions (see col 5, lines 39-43).

**Regarding claim 6:**

Ozaki further discloses:

- an actuation unit configured to automatically actuate said estimation unit and said display unit (space control section is interpreted to automatically actuate said estimation unit and said display unit) (10 in figure 112 in figure 1).

**Regarding claim 7:**

Ozaki further discloses:

- an actuation unit configured to actuate said estimation unit and said display unit in accordance with designation by a user (this limitation is obvious because most communication devices such as mobile phones have decoder to estimate the original signals and display the signal information in the display of the device, which can be adjusted manually by the user) (12 in figure 1).

**Regarding claim 10:**

Ozaki further discloses:

- an actuation unit configured to automatically actuate said estimation unit and said antenna correlation adjustment unit (space control section in figure 1 is interpreted to automatically actuate said estimation unit and said display unit) (12 in figure 1).

**Regarding claim 11:**

Ozaki further discloses:

- an actuation unit configured to actuate said estimation unit and said antenna correlation adjustment unit in accordance with designation by a user (this limitation is obvious because most communication devices such as mobile phones have decoder to estimate the original signals and display the signal information in the display of the device, which can be adjusted manually by the user) (12 in figure 1).

**Regarding claim 12:**

As shown in figure 1, Ozaki discloses an antenna correlation display method of an adaptive array radio communication apparatus having a plurality of antennas (1 and 2 in figure 1), said method comprising the steps of:

- estimating a correlation value between signals of a plurality of streams received at respective said plurality of antennas (8 in figure 1, paragraph 9), and
- displaying, on a display, said estimated correlation value between said signals of said plurality of streams (displaying report is interpreted to be displaying correlation values) (12 in figure 1, paragraph 0009);
- receiving a user input for causing the estimated correlation value to be altered by a user (moving antennas according to spacing data is interpreted to be the adjustment means altered manually by a user) (paragraph 0009); and
- readjusting the plurality of antennas (1, 2, and 10 in figure 1) based on the user-altered correlation value (moving antennas according to spacing data is interpreted to be user-altered correlation value) (paragraph 0009); and

Ozaki et al. disclose of the subject matter as described above including display

unit (12 in figure 1) to display the correlation values and report completion except for specifically teaching a display content switch unit configured to sequentially switch the display content by said display unit periodically, wherein said display unit selectively displays said estimated correlation value between said signals of said plurality of streams and a magnitude level of said estimated correlation value as a display content.

However Ozaki et al. disclose that the display unit 12 generates a completion report and correlation values of the received signal. Therefore, it would be obvious to one skilled in the art to use the display unit of Ozaki et al. wherein said estimated correlation value between said signals of said plurality of streams and a magnitude level of said estimated correlation value are displayed as display content on the display. Moreover, in paragraph 0009, Ozaki et al. clearly disclose that **"a correlation value is calculated from the signal level"**. One of ordinary skilled in the art recognizes that signal level is the magnitude level of a signal. Thus based on this portion of paragraph 0009 of Ozaki et al. it would be obvious to one skilled in the art that the display unit 12 of figure 1, does display the correlation value, which is calculated from the signal level which corresponds to magnitude level of estimated correlation value.

Ozaki et al. discloses all of the subject matter as described above except for specifically teaching sequentially switching display contents provided on the display periodically.

However, Tarusawa et al. in the same field of endeavor teach sequentially switching display contents provided on the display periodically (SW1, SW2 in figure 1A, col 5, lines 29-67). Therefore, it would have been obvious to one ordinary skill in the art

at the time the invention was made to include switching methodology as taught by Tarusawa et al. to modify the system and method of Ozaki et al. in order to space diversity reception is carried out, whereby one of the diversity antenna is selectively used depending on the reception conditions (see col 5, lines 39-43).

**Regarding claim 21:**

Ozaki further discloses wherein said display unit displays said estimated correlation value as a numeric value (correlation count section and display section are interpreted to display correlation value as a numeric value) (paragraph 0009), and wherein the user manually adjusts a separation between said plurality of antennas to make the correlation value to be smaller while viewing a current numeric value of said estimated correlation value on said display unit (moving antennas according to spacing data is interpreted to be the adjustment means altered manually by a user) (paragraph 0009).

**Regarding claim 23:**

Ozaki further discloses wherein said estimated correlation value is displayed as a numeric value correlation count section and display section are interpreted to display correlation value as a numeric value) (paragraph 0009), and wherein the user manually adjusts a separation between said plurality of antennas to make the correlation value to be smaller while viewing a current numeric value of said estimated correlation value that is being displayed (moving antennas according to spacing data is interpreted to be the adjustment means altered manually by a user, and min values are interpreted to be the correlation value to be smaller) (paragraph 0009, paragraph 0010).

**10. Claims 17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki et al. in view of Tarusawa et al. and further in view of Langberg et al. (US 5,852,630).**

**Regarding claims 17 and 25:**

Ozaki et al. discloses all of the subject matter as described above claims except for a computer readable medium storing an antenna correlation display computer program product of an adaptive array radio communication apparatus having a plurality of antennas, the computer program product causing a computer to execute the steps of:

However, Langberg et al. teaches the antenna correlation adjustment method of a communication device with proceeding can be implemented in software stored in a computer-readable medium. The computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can be contain or store a computer program for use by or in connection with a computer-related system or method. One skilled in the art would have clearly recognized that the method of Ozaki et al., and Langberg et al would have been implemented in software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to one ordinary skilled in the art at the time of the invention was made to use the software as taught by Langberg et al. in the Ozaki et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

**11. Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki et al. (JP 09-205390) in view of Jollota et al. (US 2004/0142699).**

**Regarding claims 22 and 24:**

As shown in figure 1, Ozaki et al. discloses an adaptive array radio communication apparatus having a plurality of antennas (1 and 2 in figure 1), comprising:

- an estimation unit configured to estimate a correlation value between signals of a plurality of streams received at respective said plurality of antennas (8 in figure 1, paragraph 9),
- a display unit configured to display said estimated correlation value between said signals of said plurality of streams displaying report is interpreted to be displaying correlation values) (12 in figure 1, paragraph 0009), and
- an antenna correlation adjustment unit (10 in figure 1) configured to cause the correlation value between said signals of said plurality of streams to be altered manually by a user (moving antennas according to spacing data is interpreted to be the adjustment means altered manually by a user) (paragraph 0009),
- wherein said display unit displays said estimated correlation value (12 in figure 1, paragraph 0009).

Ozaki et al. discloses all of the subject matter as described above except for specifically teaching as in either a high range, a middle range, or a low range, by way of turning on one of a first, second and third LED on said display unit.

However, Jollota et al. in the same field of endeavor teach as in either a high range, a middle range, or a low range, by way of turning on one of a first, second and third LED on said display unit (figure 4A-4F, par 0011, lines 1-18, par 0033-par 0042). Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to design the display unit as light emitting diodes (LED) as taught by Jollota et al. to modify the system and method of Ozaki et al. in order to display the signal quality for the system (see col 5, lines 39-43).

**12. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki et al. in view of Jollota et al. and further in view of Langberg et al. (US 5,852,630).**

**Regarding claim 26:**

Ozaki et al. discloses all of the subject matter as described above claims except for a computer readable medium storing an antenna correlation display computer program product of an adaptive array radio communication apparatus having a plurality of antennas, the computer program product causing a computer to execute the steps of:

However, Langberg et al. teaches the antenna correlation adjustment method of a communication device with proceeding can be implemented in software stored in a computer-readable medium. The computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can be contain or store a

computer program for use by or in connection with a computer-related system or method. One skilled in the art would have clearly recognized that the method of Ozaki et al., and Langberg et al would have been implemented in software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to one ordinary skilled in the art at the time of the invention was made to use the software as taught by Langberg et al. in the Ozaki et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

**13. Claim 27 is rejected under 35 U.S.C. 103(a) as being obvious over Ozaki et al.**

**Regarding claim 27:**

As shown in figure 1, Ozaki et al. discloses an adaptive array radio communication apparatus having a plurality of antennas, comprising:

- an estimation unit (8 in figure 1) configured to estimate a correlation value between signals of a plurality of streams received at respective said plurality of antennas (paragraph 9); and
- an antenna correlation adjustment unit (10 in figure 1) configured to alter the correlation value between said signals of said plurality of streams (paragraph 0009).
- wherein said antenna correlation adjustment unit comprises:

- an antenna driving unit (10 in figure 1) configured to modify an angle between a plurality of antennas (paragraph 0009); and
- a control unit configured to control said antenna driving unit such that an angle between said plurality of antennas is modified to cause said correlation value to become lower than a predetermined threshold value (moving antennas according to spacing data is an angle between said plurality of antennas is modified to cause said correlation value to become lower than a predetermined threshold value) (10 in figure 1, paragraph 0009).

Ozaki et al. et al. discloses all of the subject matter as described above except for specifically teaching such that said estimated correlation value becomes smaller.

However, one of ordinary skill in the art would have clearly recognized that moving antennas according to spacing data can alter the correlation value between said signals of said plurality of streams such that said estimated correlation value becomes smaller (see paragraph 0009). Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to include a space control section as taught by Ozaki et al. in space diversity antenna installation method in order to alter the correlation value between said signals of said plurality of streams such that said estimated correlation value becomes smaller.

***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kabir A. Timory whose telephone number is 571-270-1674. The examiner can normally be reached on 6:30 AM - 3:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kabir A Timory/
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611